

WASHINGTON STATE

***Law Enforcement Officers and
Fire Fighters***

Experience Study

1989 - 1994

Table of Contents

<u>Section</u>	<u>Page</u>
I. Introduction	1
II. Summary of Demographic Findings	2
III. Demographic Assumptions	4
Mortality	5
Service Retirement	12
Disability	17
Terminations	21
Termination with Vested Benefit	24
Portability	26
Salary Increase	27
Step/Longevity Salary Increase	28
Percent Married, Percent Survivors	31
Selection of Option Codes	34
Certain and Life Annuities	35
New Entrants	36
Age Difference	37
IV. Economic Assumptions	38
V. Actuarial Valuation Method	39

I. Introduction

This is a report of the findings of our study of the Law Enforcement Officers and Fire Fighters Retirement System for the six-year period ending December 31, 1994. The purposes of this Experience Study are to:

- Review actual experience in relation to the current actuarial assumptions;
- Review the actuarial method and other aspects of the actuarial basis;
- Develop any changes in the actuarial basis (actuarial method and actuarial assumptions) as may be indicated by such review; and
- Create data and statistics required for other applications.

There are two distinct types of assumptions used in an actuarial valuation:

- (1) Demographic assumptions -- estimating flows of people through the system and non-economic factors that affect benefits.
- (2) Economic assumptions -- estimating the impacts of economic factors on benefits and salaries and their present values.

II. Summary of Demographic Findings

Mortality

Mortality of retirees continues to improve for all ages.

Retirement

Retirement rates have been lower than expected.

Disability

Disability rates have continued to increase.

Termination

Termination rates were 19% below expected.

Vested Termination

Members who terminated generally left their contributions in the system as often as they had in the previous study period.

Step/Longevity Salary Increase

These salary increases (excluding general increases) primarily occur in the first 5-8 years of employment. The assumptions suggested pay increases would be 8.1% in the first year, grading down to zero by year nine and thereafter. In actuality, pay increases started off above that level and graded down over a 10-year period. They did not, however, grade to zero.

III. Demographic Assumptions

GENERAL

Demographic assumptions are those which can be readily established by statistical studies of past experience. All data used in this study was provided by the Department of Retirement Systems. The data used was based on the information provided for the annual actuarial valuation of LEOFF for 1989-94.

The valuation detail files for 1989-94 were merged to produce a single record for each person who was a member of the system during any part of the study period. Each record provides a service and salary history over the study period.

We analyzed this file for each of four causes of decrement: mortality, retirement, disability, and turnover. Our analysis revolved around ratios of actual to expected experience, both year-by-year and for the entire study period. Tables showing ratios of actual to expected experience both on the old and suggested new basis will be set out for each decrement as it is discussed.

MORTALITY

There are four mortality bases to be reviewed. Post-Disablement Mortality, Pre-Retirement Mortality, Post-Retirement Mortality, and Beneficiary Mortality.

During the winter of 1995 the Society of Actuaries published a draft of the 1994 Uninsured Pensioner Mortality Table (UP 94). The final version was not expected to be adopted until after the completion of this experience study. Therefore it was decided that the preliminary UP94 should be used. In the event the table adopted varies from the preliminary table, changes will be reflected and noted in the 1995 valuation.

We shall use the convention UP 94(+1,+1) to abbreviate 1994 Uninsured Pensioner Mortality Table with male ages set forward three years and female ages set forward one year. A set-forward is used when the mortality of the plan's members is higher than that used in developing the table. For example, if the experience of 70-year-olds in the plan is that of 73-year-olds in the mortality table, a three-year set forward is used.

Mortality rates have steadily declined through the years (though not uniformly by age or sex) reflecting advances in medicine, the availability of paramedics, etc. We have not explicitly reflected future mortality improvements in our new assumption, but have done so implicitly.

Male mortality experience fell between a one-year setback and no setback.

Post-Disablement Mortality

The effect on mortality of many disabilities is short-lived. Immediately following disablement, mortality is high, but then the effect wears off and over time mortality approaches that of the overall population. A way to accommodate these trends is to use a standard table with a floor. Mortality will be the greater of a floor and the UP 94 table set forward two years for both males and females. The floor is .5%.

Post-Retirement Mortality

The UP 94 table with a one-year set-forward for both males and females will be used.

Pre-Retirement Mortality

Mortality rates of active members prior to retirement age are very small and have limited impact on actuarial results. Also, because many illnesses force termination prior to death, mortality is difficult to determine. For these reasons and the previously mentioned reporting problems, we will use the same basis for pre-retirement as for post-retirement mortality.

Beneficiary Mortality

This group includes both the beneficiaries of active duty deaths and the beneficiaries of retiree deaths. We will use the same table for beneficiaries as for retirees.

Tables 1 and 2 demonstrate the actual and expected deaths on both the old and the new basis for post-retirement and disability mortality. Although we do not use remaining life expectancies in our calculations, they provide a good basis on which to compare mortality assumptions and to demonstrate levels of mortality. The table on the following page shows remaining life expectancies of retirees for various retirement ages. Tables 3 and 4 contain sample rates of mortality.

Pre- and Post-Retirement Mortality

Old Basis: The 1983 GAM Table: Both male and female use the male table with ages set forward one year.

New Basis: The UP 94 Table: Both male and female use the male table with ages set forward one year.

LIFE EXPECTANCY

	<u>Old Assumptions</u>	<u>New Assumptions</u>
<u>Age</u>	<u>Male</u>	<u>Male</u>
30	47.1	47.6
40	37.5	38.0
50	28.3	28.7
60	19.8	20.1
70	12.5	13.0
80	7.2	7.6
90	4.0	4.1

Disabled Life Mortality

Old Basis: The 1983 GAM Table: Male and female use the male table with ages set forward one year. Mortality is the greater of the above and .4%.

New Basis: The UP 94 Table: Male and female use the male table with ages set forward two years. Mortality is the greater of the above and .5% for both males and females.

TABLE 1
WASHINGTON STATE LAW ENFORCEMENT OFFICERS
& FIRE FIGHTERS RETIREMENT SYSTEM

**Mortality Experience
Retirees
1989 - 1994**

<u>Age</u>	<u>Actual</u>	<u>1983 Group Annuity Mortality *</u>		<u>1994 Uninsured Pensioner Mortality *</u>	
		<u>Expected</u>	<u>Ratio</u>	<u>Expected</u>	<u>Ratio</u>
-54	5	6	.83	4	1.25
55-59	15	15	1.00	14	1.07
60-64	29	32	.91	32	.91
65-69	50	51	.98	49	1.02
70-74	41	53	.77	48	.85
75-79	37	42	.88	37	1.00
80-84	31	25	1.24	23	1.35
85-89	7	9	.78	9	.78
90+	<u>2</u>	<u>3</u>	<u>.67</u>	<u>3</u>	<u>.67</u>
Total	<u>217</u>	<u>236</u>	<u>.92</u>	<u>219</u>	<u>.99</u>

*Male ages are used and set forward 1 year.

TABLE 2

WASHINGTON STATE LAW ENFORCEMENT OFFICERS
& FIRE FIGHTERS RETIREMENT SYSTEM**Mortality Experience
Disabled Members
1989 - 1994**

		<u>OLD ASSUMPTIONS</u>		<u>NEW ASSUMPTIONS</u>	
<u>Age</u>	<u>Actual</u>	<u>Expected</u>	<u>Ratio</u>	<u>Expected</u>	<u>Ratio</u>
-44	13	9	1.44	12	1.08
45-49	9	14	.64	18	.50
50-54	15	17	.88	17	.88
55-59	33	22	1.50	22	1.50
60-64	42	33	1.27	37	1.14
65-69	57	53	1.08	55	1.04
70-74	43	49	.88	49	.88
75-79	23	26	.88	25	.92
80-84	15	14	1.07	14	1.07
85+	<u>3</u>	<u>5</u>	<u>.60</u>	<u>5</u>	<u>.60</u>
Total	<u>253</u>	<u>242</u>	<u>1.05</u>	<u>254</u>	<u>1.00</u>

TABLE 3

WASHINGTON STATE LAW ENFORCEMENT OFFICERS
& FIRE FIGHTERS RETIREMENT SYSTEM

Probability of Mortality
Actives, Retirees and Beneficiaries

<u>Age</u>	<u>Actives and Retirees Mortality</u>	<u>Beneficiaries</u>
20	.0570%	.0308%
25	.0749%	.0316%
30	.0883%	.0401%
35	.0927%	.0550%
40	.1243%	.0826%
45	.1852%	.1111%
50	.3088%	.1686%
55	.5322%	.2755%
60	.9663%	.5476%
65	1.7462%	1.0423%
70	2.7905%	1.6079%
75	4.3933%	2.7231%
80	7.3780%	4.7260%
85	11.3755%	8.1018%
90	17.9849%	13.8442%
95	27.0441%	21.7783%

TABLE 4

WASHINGTON STATE LAW ENFORCEMENT OFFICERS
& FIRE FIGHTERS RETIREMENT SYSTEMProbability of Mortality
Disabled Members

	<u>Mortality</u>
20	.5000%
25	.5000%
30	.5000%
35	.5000%
40	.5000%
45	.5000%
50	.5000%
55	.6001%
60	1.0911%
65	1.9391%
70	3.0625%
75	4.8570%
80	8.1217%
85	12.4377%

SERVICE RETIREMENT**Plan I**

The ages at which members retire is a major factor in the cost of a retirement system. Our study of Plan I service retirements shows that retirement rates have decreased. During the 1989-94 study period, retirement rates were 22% below expected.

Plan II

We do not yet have sufficient retirees to determine retirement rates statistically. Differences between LEOFF I and II benefits, however, suggest there will be different patterns of retirement.

RETIREMENT ELIGIBILITY

	<u>Plan I</u>	<u>Plan II</u>
Retirement with Full Benefits:	Age 50 & 5 Years of Service	Age 55 & 5 Years of Service
		-or-
		Age 50 & 20 Years of Service*
Maximum Benefit:	60% for members hired after February 19, 1974	None

* Plan II members' benefits are actuarially reduced if they retire prior to age 55.

Retirement

Old Basis: Table based upon 1985-88 Law Enforcement Officers and Fire Fighters Retirement System experience.

New Basis: Plan I - Table based upon 1989-94 Law Enforcement Officers and Fire Fighters Retirement System experience.

Plan II - Unchanged.

Please see Table 6 for the new Plan I retirement rates, and Table 7 for Plan II retirement rates.

TABLE 5

WASHINGTON STATE LAW ENFORCEMENT OFFICERS
& FIRE FIGHTERS RETIREMENT SYSTEMPlan I Retirement Experience
1989 - 1994

<u>Age</u>	<u>Actual</u>	<u>OLD ASSUMPTIONS</u>		<u>NEW ASSUMPTIONS</u>	
		<u>Expected</u>	<u>Ratio</u>	<u>Expected</u>	<u>Ratio</u>
50	145	260	.56	150	.97
51	50	90	.56	38	1.32
52	56	62	.90	56	1.00
53	53	48	1.10	70	.76
54	49	47	1.04	50	.98
55	50	36	1.39	38	1.32
56	22	27	.81	18	1.22
57	10	21	.48	14	.71
58	14	18	.78	10	1.40
59	17	14	1.21	16	1.06
60	12	9	1.33	10	1.20
61	15	5	3.00	14	1.07
62	12	5	2.40	10	1.20
63	5	6	.83	5	1.00
64	4	8	.50	7	.57
65+	<u>5</u>	<u>22</u>	<u>.68</u>	<u>22</u>	<u>.68</u>
Total	<u>529</u>	<u>678</u>	<u>.78</u>	<u>528</u>	<u>1.00</u>

TABLE 6
WASHINGTON STATE LAW ENFORCEMENT OFFICERS
& FIRE FIGHTERS RETIREMENT SYSTEM

**Service Retirement
Probability of Retirement
Plan I Members Eligible to Retire**

<u>Age</u>	<u>Probability of Retirement</u>
50	14%
51	5%
52	10%
53	15%
54	15%
55	15%
56	10%
57	10%
58	10%
59	20%
60	20%
61	40%
62	40%
63	25%
64	25%
65+	*

* Immediate retirement is assumed for every person who attains age 65.

TABLE 7

WASHINGTON STATE LAW ENFORCEMENT OFFICERS
& FIRE FIGHTERS RETIREMENT SYSTEM**Service Retirement
Probability of Retirement
Plan II Members Eligible to Retire**

<u>Age</u>	<u>Probability of Retirement</u>
50	2%
51	2%
52	2%
53	5%
54	18%
55	86%
56	30%
57	30%
58	35%
59	35%
60	35%
61	35%
62	35%
63	35%
64	35%
65+	*

* Immediate retirement is assumed for every person who attains age 65.

DISABILITY

As is the case with retirement, the age at which a member becomes disabled is also a major factor in the cost of the LEOFF retirement system. Experience has been above the rates developed in the last experience study. During the 1989-94 study period, disability rates were 31% above expected.

Old Basis: Disability Table based on 1985-88 Law Enforcement Officers and Fire Fighters Retirement System experience.

New Basis: Disability Table based on 1989-94 Law Enforcement Officers and Fire Fighters Retirement System experience.

TABLE 8

WASHINGTON STATE LAW ENFORCEMENT OFFICERS
& FIRE FIGHTERS RETIREMENT SYSTEMPlan I Disability Experience
1989 - 1994

<u>Age</u>	<u>OLD ASSUMPTIONS</u>			<u>NEW ASSUMPTIONS</u>	
	<u>Actual</u>	<u>Expected</u>	<u>Ratio</u>	<u>Expected</u>	<u>Ratio</u>
-34	6	4	1.50	3	2.00
35-39	62	54	1.15	55	1.13
40-44	221	208	1.06	219	1.01
45-49	417	299	1.39	433	.96
50-54	308	188	1.64	276	1.12
55-59	73	71	1.03	90	.81
60+	14	18	.78	23	.61
Total	<u>1,101</u>	<u>842</u>	<u>1.31</u>	<u>1,099</u>	<u>1.00</u>

TABLE 9
WASHINGTON STATE LAW ENFORCEMENT OFFICERS
& FIRE FIGHTERS RETIREMENT SYSTEM

Plan II Disability Experience
1989 - 1994

<u>Age</u>	<u>OLD ASSUMPTIONS</u>			<u>NEW ASSUMPTIONS</u>	
	<u>Actual</u>	<u>Expected</u>	<u>Ratio</u>	<u>Expected</u>	<u>Ratio</u>
-34	1	12	.08	4	.25
35-39	1	9	.11	3	.33
40-44	1	8	.12	3	.33
45-49	0	5	.00	2	.00
50-54	1	5	.20	2	.50
55-59	1	3	.33	1	1.00
60+	<u>1</u>	<u>0</u>	<u>NMF</u>	<u>0</u>	<u>NMF</u>
Total	<u>6</u>	<u>42</u>	<u>.14</u>	<u>14</u>	<u>.43</u>

TABLE 10

WASHINGTON STATE LAW ENFORCEMENT OFFICERS
& FIRE FIGHTERS RETIREMENT SYSTEM

Probability of Disablement

<u>Age</u>	<u>Plan I</u>	<u>Plan II</u>
20	.10%	.01%
25	.10%	.01%
30	.80%	.01%
35	1.49%	.02%
40	2.07%	.04%
45	3.93%	.07%
50	6.82%	.25%
55	9.62%	N.A.
58+	11.32%	N.A.

TERMINATIONS

Our study indicates that general employment turnover has declined since the last study. The patterns of turnover are very high in the early years of service and decline rapidly thereafter.

At least two successive years of experience are needed to determine the status of a terminating member with any degree of confidence due to the significant number of members who return to work following a short absence.

On the following pages are tables showing the actual and expected terminations using the old and new assumptions. Table 12 contains sample rates of termination.

Old Basis: Plan I and Plan II termination tables based on the 1985-88 Law Enforcement Officers and Fire Fighters Retirement System experience with a 7-year select period.

New Basis: Plan I and Plan II termination tables based on the 1989-93 Law Enforcement Officers and Fire Fighters Retirement System experience.

TABLE 11

WASHINGTON STATE LAW ENFORCEMENT OFFICERS
& FIRE FIGHTERS RETIREMENT SYSTEMTermination Experience
1989 - 1993

Years of Service	<u>OLD ASSUMPTIONS</u>			<u>NEW ASSUMPTIONS</u>	
	<u>Actual</u>	<u>Expected</u>	<u>Ratio</u>	<u>Expected</u>	<u>Ratio</u>
0-1	850	902	.94	832	1.02
2-3	145	278	.52	163	.89
4-5	107	187	.57	105	1.02
6-7	84	102	.82	78	1.08
8-9	71	69	1.03	71	1.00
10-11	59	54	1.09	63	.94
12-13	31	37	.84	35	.89
14-15	17	24	.71	13	1.31
16-17	7	19	.37	10	.70
18-19	12	22	.55	11	1.09
20-21	11	19	.58	9	1.22
22-23	11	12	.92	5	2.20
24-25	<u>3</u>	<u>5</u>	<u>.60</u>	<u>2</u>	<u>1.50</u>
Total	<u>1,408</u>	<u>1,730</u>	<u>.81</u>	<u>1,397</u>	<u>1.01</u>

TABLE 12

WASHINGTON STATE LAW ENFORCEMENT OFFICERS
& FIRE FIGHTERS RETIREMENT SYSTEM**General Employment Turnover
Probability of Termination in the Next Year**

<u>Years of Service</u>	<u>Male and Female</u>
0	10.43%
1	4.88%
2	2.47%
3	2.27%
4	1.98%
5	1.88%
6	1.78%
7	1.69%
8	1.59%
9	1.49%
10	1.39%
11	1.29%
12	1.00%
13	.70%
14	.50%
15+	.30%

TERMINATION WITH VESTED BENEFIT

The probability of vesting upon termination is a function of age and service. For younger members with less service, a return of contributions will exceed the discounted value of the future pension benefit. Also there are competing demands for dollars such as mortgage and car payments, and pension savings rarely win out. For older members with more service, the reverse is true. Table 13 displays sample vesting rates.

Old Basis: Probability of Vesting Upon Termination table based on 1985-88 Law Enforcement Officers and Fire Fighters Retirement System experience.

New Basis: Unchanged.

TABLE 13

WASHINGTON STATE LAW ENFORCEMENT OFFICERS
& FIRE FIGHTERS RETIREMENT SYSTEM

Probability of Vesting Upon Termination

<u>Years of Service</u>	<u>Plan I</u>	<u>Plan II</u>
Under 5	0%	0%
5	15%	20%
6	20%	20%
7	25%	20%
8	30%	20%
9	35%	20%
10	40%	20%
11	45%	20%
12	50%	20%
13	55%	20%
14	60%	25%
15	65%	30%
16	75%	35%
17	85%	40%
18	90%	45%
19	100%	50%
20	100%	55%
21	100%	60%
22	100%	65%
23	100%	70%
24	100%	75%
25	100%	85%
26	100%	90%
27+	100%	100%

PORTABILITY

Portability increases the liabilities associated with dual members. The increased costs are a function of their salary and service in their later system. The 1989-94 Experience Study determined the following for dual members who are no longer active members:

**PERCENTAGE OF TERMINATIONS WITH DUAL
MEMBERSHIP**

	<u>Service ≥ 5 Years</u>	<u>Service < 5 Years</u>
LEOFF II	27.71%	10.71%

**AVERAGE SALARY
OF TERMINATED VESTED**

	<u>All</u>	<u>Dual Members</u>
LEOFF II	\$27,050	\$28,223

SALARY INCREASE

Salary increases usually have two parts: (1) a cost-of-living or inflation component, and (2) a "step" increase. For law enforcement officers and fire fighters the step increase may be a measure of either years of service or rank. For example, there may be one pay scale for police officers with a rank of lieutenant, another for those with a rank of sergeant, etc. This experience study will focus on the "step" portion of pay increases. The cost-of-living component will be studied with other economic factors in 1995.

The salary scale developed for valuation purposes will not match the salary scales established by the state for several reasons. A few of these reasons follow:

- (1) The valuation pay scale is developed as a composite of the prior six years' experience. Thus it reflects a melding of three biennial pay scales, not one particular pay scale.
- (2) In addition to salary increases due to the pay scale, some law enforcement officers and fire fighters will be promoted to a higher rank, administrative positions, etc. Any of these may lead to pay increases. These are also included in our study.

We have developed an average scale by studying the salaries reported to DRS. The following table based on reported salaries develops larger salary increases, especially for members in their early years of service. Table 14 displays the actual and expected merit increases for the Study Period. Table 15 sets out the average percentage increase each year.

STEP/LONGEVITY SALARY INCREASE

Old Basis: Scale based on 1985-88 Law Enforcement Officers and Fire Fighters Retirement System Experience with a 7-year select period.

New Basis: Scale based on the 1989-94 Law Enforcement Officers and Fire Fighters Retirement System Experience with a 17-year select period and an ultimate rate of .5%.

TABLE 14

WASHINGTON STATE LAW ENFORCEMENT OFFICERS
& FIRE FIGHTERS RETIREMENT SYSTEM

**Average Increase in Salary for Members
Who Were Active at End of Consecutive Years
1989 - 1994**

<u>Years of Service</u>	<u>Actual</u>	<u>Expected</u>
1	9.5%	8.1%
2	6.5%	5.2%
3	4.9%	3.9%
4	3.6%	2.6%
5	2.4%	1.7%
6	2.0%	.7%
7	1.4%	.5%
8	1.1%	.3%
9	1.3%	0%
10	1.8%	0%
11	.9%	0%
12	1.3%	0%
13	.9%	0%
14	1.2%	0%
15	1.0%	0%
16	.6%	0%
17	.3%	0%
18	.0%	0%
19	.8%	0%

TABLE 15

WASHINGTON STATE LAW ENFORCEMENT OFFICERS
& FIRE FIGHTERS RETIREMENT SYSTEM

**Plan I and Plan II
Step/Longevity Salary Increases**

<u>Years of Service</u>	<u>Percent Increase</u>	<u>Multiple of Entry Salary</u>
1	9.0%	1.090
2	7.0%	1.166
3	5.0%	1.225
4	4.0%	1.274
5	2.5%	1.305
6	2.0%	1.332
7+	1.5%	1.352
8	1.4%	1.370
9	1.3%	1.388
10	1.2%	1.405
11	1.1%	1.420
12	1.0%	1.435
13	1.0%	1.449
14	.9%	1.462
15	.8%	1.474
16	.7%	1.484
17	.6%	1.493
18+	.5%	

NOTE: The above includes only step increases. During the 1989-1994 period, general salary increases averaged 4.3%.

PERCENT MARRIED, PERCENT SURVIVORS**Percent Married**

LEOFF I: Percent Married is the percentage of members, active or retired, who have a spouse eligible for survivor benefits upon the member's death.

LEOFF II: Percent Married is the percent of active members who have a spouse eligible for survivor benefits upon the member's death.

Old Basis: Table based on 1985-88 Law Enforcement Officers and Fire Fighters Retirement System experience.

New Basis: Unchanged.

Percent Survivors

Percent Survivors is the percentage of LEOFF II retirees who have selected a continuing benefit option whose beneficiary is still alive at the retiree's death.

Old Basis: Table based on 1985-88 Law Enforcement Officers and Fire Fighters Retirement System experience.

New Basis: Table based on 1984-94 Law Enforcement Officers and Fire Fighters Retirement System experience combined with projection of the newly adopted mortality table, UP 94 (+1,+1).

TABLE 16

WASHINGTON STATE LAW ENFORCEMENT OFFICERS
& FIRE FIGHTERS RETIREMENT SYSTEM

Percent Married*

<u>Age</u>	<u>Percent Married</u>
20	20%
25	45%
30	70%
35	90%
40	95%
45	90%
50	85%
55	85%
60	85%
65	80%
70	75%
75	60%
80	45%
85+	30%

* Percentage of members with a spouse who is eligible for a survivor benefit.

TABLE 17

WASHINGTON STATE LAW ENFORCEMENT OFFICERS
& FIRE FIGHTERS RETIREMENT SYSTEM**Percent Survivors***
Plan II

<u>Age</u>	
55	99%
60	98%
65	96%
70	91%
75	84%
80	73%
85	57%
90	37%

* Percentage of members with a spouse who is eligible for a survivor benefit.

SELECTION OF OPTION CODES

Retiring members of LEOFF II may select any of three retirement options:

- | | |
|-----------|---|
| Option 1: | Payments for the life of the member. |
| Option 2: | Reduced payments for the life of the member, continued for the life of a beneficiary at the same level. |
| Option 3: | Reduced payments for the life of the member, continued for the life of a beneficiary at half the level paid when both were alive. |

Members choose the options with the following frequency:

- | | |
|-----------|------------|
| Option 1: | 60% |
| Option 2: | 24% |
| Option 3: | <u>16%</u> |
| | 100% |

CERTAIN AND LIFE ANNUITIES

In LEOFF I the refund of accumulated contributions is de minimus because of the low retirement age and the survivor annuity paid to a spouse or child.

In LEOFF II the standard retirement option is a monthly benefit payable for the life of the member. Additionally, if the retiree dies before the total of payments exceed the member's accumulated contributions, the difference is paid to a beneficiary. In valuing liabilities, we will recognize this death benefit by using a life annuity with a 4½ year certain period.

NEW ENTRANTS

Following are the distributions of new entrants as used in projecting plan membership. New members enter the projection system not only for growth, but also to replace members who leave by reason of retirement, death, termination, or disability.

MALES		
	Lives per <u>1,000 New Entrants</u>	Salary as a Percentage <u>of all New Entrants</u>
25	92	93.2%
30	52	96.2%
35	36	98.3%
40	19	101.6%
45	8	108.2%
50	2	127.8%

The average annual salary for all new members is \$33,805.

AGE DIFFERENCE

The average age difference between a member and spouse/beneficiary is used in two contexts:

If the member dies in service with 10 or more years of service credit, a surviving spouse may elect a survivor annuity. The amount of the option and the present value of the annuity are each a function of the age of the spouse.

When a member retires and selects a joint and survivor option, the beneficiary is usually a spouse but it is sometimes a child, grandchild, etc. These beneficiaries tend to be younger than the member.

Below are the average age differences: Member age minus beneficiary age.

<u>Member-Beneficiary</u>	<u>Active Retiree Surviving Spouse</u>	<u>Retired Member Surviving Beneficiary</u>
Plan I	+ 2.60 years	+ 2.60 years
Plan II	+ 2.60 years	+ 3.63 years

IV. Economic Assumptions

Economic assumptions are those used for long-term projections of all the economic factors that affect our pension systems. It may seem unreasonable to attempt a prediction of inflation and investment return over the next 60 years, but it is necessary because of the long-term obligations created by our pension systems. The potential obligation is created on the day of hire. The right to a benefit develops with each year of service, but the benefit is determined by the salary near retirement. Budgeting for the benefit involves estimating its size and accumulating money with investment return to cover the cost.

The impact of economic assumptions on contribution rates can be significant. Every dollar of investment return replaces a dollar of contribution; every salary increase translates into greater benefits and to a lesser extent, greater contributions. Finally, Plan I benefits are fully indexed to the Consumer Price Index. Thus, inflation drives up benefits.

A good set of economic assumptions are those with the best probability of producing future gains and losses that will offset each other over a long period.

We will use the following set of economic assumptions:

Investment Return Rate	7½ %
Salary Inflation Rate	5½ %
Consumer Price Index	5%

Growth of Active Membership

Growth membership is assumed to be 1¼%.

V. Actuarial Valuation Method

The Funding Statutes (Chapter 41.45 RCW) require:

Plan I to be funded as a level percentage of all future pay needed to fully amortize the total cost of Plan I not later than June 30, 2024.

Plan II to be funded using the Aggregate Actuarial Cost Method.

To satisfy these funding goals we will use a version of the Entry Age Cost Method. Under this method, the Normal Cost of benefits is determined as that contribution rate which, if paid from entry date to retirement date on behalf of the average member of the system, would fully support such member's benefits.

The contribution rate is developed as the sum of the Normal Cost and a rate to amortize the Unfunded Actuarial Liability as a percentage of all future pay by June 30, 2024. Because all future members of LEOFF are to be in Plan II, we will apply the Normal Cost developed in Plan II to Plan I.

These assumptions will be reviewed in 1995 in our review of economic assumptions.